With an estimated world production of capacity of 377,000 metric tons in 2006, Propionic Acid is an important organic acid that does not receive much publicity. Propionic Acid – which occurs naturally in apples, strawberries, grains, cheese, and human sweat – is mainly used as a mold inhibitor for various animal feed and baked goods as well as a preservative in cheeses. It is also a significant precursor in many industrial processes such as pharmaceuticals, plastics, plasticizers, textile and rubber auxiliaries, dye intermediates, as well as flavorings and cosmetics. Our group has designed a chemical plant for the production of Propionic Acid with a projected output of 33,000 tons per year. The initial feedstock will comprise of Sygnas (a mixture of CO and H­2) and Ethylene, which will react in a process known as carbonylation in the presence of a catalyst to produce Propionaldehyde. The Propionaldehyde will then be oxidized to produce Propionic Acid. The market demand for Propionic Acid is expected to grow at around 2.3% per year regardless of the state of the economy since food production and preservation is highly dependent upon it. With a steadily increasing market price and demand for Propionic Acid along with its marketability in other industrial processes combined with its high price relative to our cheaper reactants and catalysts should make the proposed plant a very economically feasible one.